

May 12, 2009

Mr. Kevin Bronson
Site Vice President
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION - NRC EXAMINATION REPORT
05000293/2009301

Dear Mr. Bronson:

On March 27, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an examination at Pilgrim Nuclear Power Station. The enclosed report documents the examination results, which were discussed on April 22, 2009, with Mr. Mark Santiago, Operations Training Superintendent.

The examination included the evaluation of two applicants for reactor operator licenses, six applicants for instant senior operator licenses and one applicant for an upgrade senior operator license. The written and operating examinations were developed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The license examiners determined that all applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Samuel L. Hansell, Jr., Chief
Operations Branch
Division of Reactor Safety

Docket No. 50-293
License No. DPR-35

Mr. Kevin Bronson
 Site Vice President
 Entergy Nuclear Operations, Inc.
 Pilgrim Nuclear Power Station
 600 Rocky Hill Road
 Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER STATION - NRC EXAMINATION REPORT
 05000293/2009301

Dear Mr. Bronson:

On March 27, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed an examination at Pilgrim Nuclear Power Station. The enclosed report documents the examination results, which were discussed on April 22, 2009, with Mr. Mark Santiago of your staff.

The examination included the evaluation of two applicants for reactor operator licenses, six applicants for instant senior operator licenses and one applicant for an upgrade senior operator license. The written and operating examinations were developed using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The license examiners determined that all applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Samuel L. Hansell, Jr., Chief
 Operations Branch
 Division of Reactor Safety

Docket No. 50-293
 License No. DPR-35

SUNSI Review Complete: JD (Reviewer's Initials)
 ADAMS PKG NO.: ML082600435 ADAMS ACCESSION NO. ML091320346

DOCUMENT NAME:
 G:\DRS\Operations Branch\DANTONIO\Exam 09-PIL Mar 09 (U01744)\PILGRIM EXAM REPORT.doc
 After declaring this document "An Official Agency Record" it will be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RI/DRS/OB	RI/DRS/OB	RI/DRS/OB				
NAME	CJBixler/DS/CB	JD'Antonio/JD	SHansell/SH				
DATE	05/5/09	05/5/09	05/12/09				

OFFICIAL RECORD COPY

Enclosure:
NRC Examination Report 05000293/2009301

cc w/encl:
Vice President, Operations, Entergy Nuclear Operations
Vice President, Oversight, Entergy Nuclear Operations
Senior Manager, Nuclear Safety & Licensing, Entergy Nuclear Operations
Senior Vice President and COO, Entergy Nuclear Operations
Assistant General Counsel, Entergy Nuclear Operations
R. Walker, Director, Radiation Control Program, Commonwealth of Massachusetts
The Honorable Therese Murray
The Honorable Vincent deMacedo
Chairman, Plymouth Board of Selectmen
Chairman, Duxbury Board of Selectmen
Chairman, Nuclear Matters Committee
Plymouth Civil Defense Director
D. O'Connor, Massachusetts Secretary of Energy Resources
J. Miller, Senior Issues Manager
Office of the Commissioner, Massachusetts Department of Environmental Protection
Office of the Attorney General, Commonwealth of Massachusetts
Electric Power Division, Commonwealth of Massachusetts
R. Shadis, New England Coalition Staff
D. Katz, Citizens Awareness Network
W. Meinert, Nuclear Engineer
J. Giarrusso, MEMA, SLO
Commonwealth of Massachusetts, Secretary of Public Safety
V. Fallacaro, Manager, Training and Development

K. Bronson

3

Distribution w/encl: (via E-mail)

S. Collins, RA
M. Dapas, DRA
D. Roberts, DRS
P. Wilson, DRS
D. Lew, DRP
J. Clifford, DRP
Stephen Campbell, RI OEDO
M. Gray, DRP
B. Bickett, DRP
A. Rosebrook, DRP
S. McCarver, DRP
M. Kowal, NRR
J. Kim, PM, NRR
J. Boska, NRR
R. Nelson, NRR
M. Schneider, DRP, Senior Resident Inspector
B. Smith, DRP, Resident Inspector
A. Ford, DRP, Resident OA
S. Hansell, DRS
J. D'Antonio, DRS
D. Bearde, DRP
Region I Docket Room (with concurrences)
ROPreports.Resource@nrc.gov

Distribution w/encl:

DRS Master Exam File (C. Bixler) (w/concurrences)
DRS File

EXAMINATION REPORT
U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Dockets: 50-293

Licenses: DPR-35

Report : 05000293/2009301

Licensee: Entergy

Facility: Pilgrim Nuclear Power Station

Location: 600 Rocky Hill Road
Plymouth, MA 02360

Dates: March 20 – April 14, 2009

Inspectors: Joseph D'Antonio, Chief Examiner, Operations Branch
Brian Fuller, Operations Engineer
Peter Presby, Operations Engineer

Approved By: Samuel L. Hansell, Jr., Chief
Operations Branch
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

ER 05000293/2009301; March 20 - April 14, 2009; Pilgrim Nuclear Power Station; Initial Operator Licensing Examination Report.

NRC examiners evaluated the competency of two applicants for reactor operator licenses, six applicants for instant senior operator licenses and one applicant for an upgrade senior operator license at Pilgrim Nuclear Power Station. The facility licensee developed the examinations using NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1. The written examination was administered by the facility on March 20, 2009. NRC examiners administered the operating tests on March 23-27, 2009. The license examiners determined that all applicants satisfied the requirements of 10 CFR Part 55, and the appropriate licenses have been issued.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA5 Other Activities (Initial Operator License Examination)

.1 License Applications

a. Scope

The examiners reviewed all nine license applications submitted by the licensee to ensure the applications reflected that each applicant satisfied relevant license eligibility requirements. The applications were submitted on NRC Form 398, "Personal Qualification Statement," and NRC Form 396, "Certification of Medical Examination by Facility Licensee."

b. Findings

No findings of significance were identified.

.2 Operator Knowledge and Performance

a. Examination Scope

On March 20, 2009, the licensee proctored the administration of the written examinations to all nine applicants. The licensee staff graded the written examinations, analyzed the results, and presented their analysis to the NRC on April 3, 2009.

The NRC examination team administered the various portions of the operating examination to all nine applicants on March 23 - 27, 2009. The two applicants for reactor operator licenses participated in either two or three dynamic simulator scenarios, in a control room and facilities walkthrough test consisting of eleven system tasks, and an administrative test consisting of four administrative tasks. The six applicants seeking an instant senior operator license participated in either two or three dynamic simulator scenarios, a control room and facilities walkthrough test consisting of ten system tasks, and an administrative test consisting of five administrative tasks. The one applicant for an upgrade senior operator license participated in two dynamic simulator scenarios, a control room and facilities walkthrough test consisting of five system tasks, and an administrative test consisting of five administrative tasks.

b. Findings

All nine applicants passed all parts of the operating test. For the written examinations, the reactor operator applicants' average score was 82 percent and ranged from 80 to 84 percent, the senior operator applicants' average score was 86.7 percent and ranged from 81 to 93 percent. The overall written examination average was 85.6 percent. The text of the examination questions and the licensee's post-examination comments may

Enclosure

be accessed in the ADAMS system under the accession numbers noted in Attachment 1 to this report.

Chapter ES-403 and Form ES-403-1 of NUREG 1021 require the licensee to analyze the validity of any written examination questions that were missed by half or more of the applicants. The licensee conducted this performance analysis for six questions that met these criteria and submitted the analysis to the chief examiner. This analysis concluded that two of the questions required changes to the answer key. The licensee's recommendations and the NRC responses are provided as Attachment 3 to this report.

.3 Initial Licensing Examination Development

a. Examination Scope

The facility licensee developed the examinations in accordance with NUREG-1021, Revision 9, Supplement 1. All licensee facility training and operations staff involved in examination preparation and validation were on a security agreement. The facility licensee submitted both the written and operating examination outlines on January 2, 2009. The chief examiner reviewed the outlines against the requirements of NUREG-1021, Revision 9, Supplement 1, and provided comments to the licensee. The facility licensee submitted the draft examination package on February 5, 2009. The NRC conducted an onsite validation of the operating examinations and provided comments during the week of February 23, 2009. The licensee satisfactorily completed comment resolution on March 10, 2009.

b. Findings

The NRC approved the initial examination outline and advised the licensee to proceed with the operating examination development.

The examiners determined that the written and operating examinations initially submitted by the licensee were within the range of acceptability expected for a proposed examination.

.4 Simulation Facility Performance

a. Examination Scope

The examiners observed simulator performance with regard to plant fidelity during the examination validation and administration.

b. Findings

No findings of significance were identified.

.5 Examination Security

a. Examination Scope

The examiners reviewed examination security for examination development and during both the onsite preparation week and examination administration week for compliance with NUREG-1021 requirements. Plans for simulator security and applicant control were reviewed and discussed with licensee personnel.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

The chief examiner presented observations on the conduct of the examination to Mr. R. Smith, General Manger Plant Operations, and other members of the plant staff during an outbrief on March 27, 2009. Final examination results, including license numbers, were provided in a telephone exit to Mr. Mark Santiago, Operations Training Superintendent, on April 22, 2009. The licensee acknowledged the observations presented.

The licensee did not identify any information or materials used during the examination as proprietary.

ATTACHMENT1: SUPPLEMENTAL INFORMATION
ATTACHMENT2: SIMULATION FACILITY REPORT
ATTACHMENT3: FACILITY COMMENTS AND NRC RESOLUTION

Enclosure

A-1

ATTACHMENT

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

V. Fallacaro, Training Manager
M. Santiago, Operations Training Superintendent
R. Smith, General Manger Plant Operations
D. Noyes, Operations Manager
J. House, Initial Training Superintendent

NRC Personnel

J. D'Antonio, Senior Operations Engineer

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

NONE

Closed

NONE

Discussed

NONE

ADAMS DOCUMENTS REFERENCED

Accession No. ML091250549 – FINAL-Written Exam
Accession No. ML091260229 – FINAL-Operating Exam
Accession No. ML091310567 – FINAL-Post Exam Comments

ES-501**Simulator Fidelity Report****Attachment 2**

Facility Licensee: Pilgrim Facility Docket No.: 50-293 Operating Test Administered on: 3/23-3/27, 2009

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and, without further verification and review in accordance with IP 71111.11, are not indicative of noncompliance with 10 CFR 55.46. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, examiners observed the following items:

Simulator EPR setpoint ramps up following energization over about 1 minute where procedure says takes 5 minutes on reference plant. This was observed during validation and just prior to administration. Per the Software Engineer, modeling based on GE design data at 40 seconds, which was provided by a GE Startup Engineer. Procedure is 2.2.99, "Main Turbine Generator", Rev 46.

During JPM administration, the setpoint immediately went to full scale upon energization, exhibiting a behavior different from that observed during validation. Support staff could not explain the anomaly. Examiners had to work through this by cueing the applicants that "for purposes of the JPM, they are to assume the parameter ramped over 5 minutes to full scale and has just reached full scale."

JPM S-7, "Restore Drywell Cooling Loop B RBCCW". Drywell temperature increased rapidly to 316F, and then plateaued. Drywell temperature should come to equilibrium state in a more gradual manner. The station generated a simulator DR in 2007 (DR A7012), which is still open. Per Simulator Software Engineer, the facility is going out for bids to perform a containment thermal analysis to support simulator model changes.

JPM S-7. Received NON REGEN HX DP HI alarm (Panel C14, WindowG-4) when 4009A RBCCW isolation valve was almost fully open. 4009B was still fully closed and RBCCW header pressure remained high.

JPM S-2, Place Feed Control Valve in Service. EPIC Workstation WS08 would not update the trend for FWR114, but FWR114 digital value did update. Worked okay on adjacent Workstation WS07.

Scenario #1 (3/24/09). Caution tag hung beside Steam Chest Pressure Indicator on Panel C1 stating instrument root isolation closed. Tag hung to match current reference plant configuration, where valve is actually closed. However, simulator not configured to model behavior consistent with having the root isolation closed. Steam chest pressure tracked accurately from full load to low pressure condition.

Scenario #4, Run #2. Several control rods did not fully insert, requiring crew to enter EOP-2.

This was not intended or scripted for the scenario.

JPM S-5, "Restoration of SDC Loop A". Procedure 2.2.19.1, "Residual Heat Removal System - Shutdown Cooling Mode of Operation", Rev 27, Attachment 12, Note before Step 2.0 [7] explains that FI-1040-1A(B) and 2A(B) will indicate zero flow with actual RHR flow ≤ 1400 gpm. However, the simulator displays flow on these instruments throughout their range. Simulator does not appear to model instrument response of the reference plant.

ATTACHMENT 3

NRC Resolution of Facility Comments

Question 72:

Question: Common 72

During a Site Area Emergency which one of the following personnel man the ENS - NRC Emergency Notification System.

- A. An off-shift qualified operator called to the Control Room.
- B. An on-shift qualified operator on watch in the Control Room.
- C. An off-shift operator called to the Off-site Emergency Operations Facility.
- D. An on-shift operator familiar with the event dispatched to the Off-site Emergency Operations Center.

Proposed Answer: A.

Explanation (Optional):

- A. Correct. Assign an off-shift Operator or designated individual, upon arrival, to establish communications with the NRC over the ENS phone and maintain a communications log.
- B. Incorrect – An off-shift operator is called in
- C. Incorrect. Communications are from the Control Room.
- D. Incorrect. An off-shift operator is called in and communications are from the Control Room

Facility Comment:

The question stem does not adequately identify the time frame for which the applicant is expected to answer. Accept "B" as an additional correct answer.

NRC Resolution:

Comment Accepted. This question asks for who mans the ENS during an SAE. Facility Emergency Plan Implementing Procedures require the ENS to be continuously manned once the NRC is contacted. This task is initially assigned to an on-shift operator, then turned over to a called-in individual. Either "A" or "B" are correct with the question stem as written.

Question 75:

Question: Common 75

A General Emergency exists.

A piece of equipment required for mitigation of the accident must be operated locally in a radiation field of 60 Rem per hour. There is NO immediate danger to the public.

A 52 year old worker volunteers to perform the required manipulation. He has 0 mrem accumulated dose for this calendar year.

Which ONE of the following describes the (1) amount of time spent in the area until the volunteer's annual TEDE limit is reached, and (2) the MAXIMUM dose he is authorized to receive to perform this operation?

- A. (1) Three minutes
(2) 10 Rem
- B. (1) Three minutes
(2) 25 Rem
- C. (1) Five minutes
(2) 10 Rem
- D. (1) Five minutes
(2) 25 Rem

Proposed Answer: C

Explanation (Optional):

- A. Incorrect. 3 Rem is the former limit for quarterly TEDE and also part of the Entergy Admin dose control limit criteria
- B. Incorrect. 25 Rem is the limit for life saving operations and protection of large populations
- C. Correct.
- D. Incorrect. 25 Rem is the limit for life saving operations and protection of large populations

Facility Comment:

The question states that a GE is in progress, states that a piece of equipment is needed to mitigate the GE, and asks for the applicable exposure limit. The correct answer is "D" since

mitigating the GE would be considered “protection of large populations” with an exposure limit of 25 rem. The original answer “C” was 10 rem based on protecting valuable equipment.

NRC Resolution:

Comment Accepted. The facility explanation is supported by EP-IP-440. The exposure limit for lifesaving or protection of large populations is 25 rem. The examiner agrees that actions necessary to mitigate a General Emergency should be considered protection of large populations.

JPM – Verify Recombiner Operation

Facility Comment:

Delete a technically incorrect critical step grading standard. One critical step in this JPM requires the applicant to evaluate Procedure 2.4.141 attachment 1 sheet 1, which looks at recombiner delta T, defined as recombiner exit temperature minus preheater exit temperature. The JPM expected the applicants to use recombiner top temperature as the exit temperature. This procedure is technically incorrect. Pilgrim does not have a recombiner exit temperature instrument, and top temperature is not a technically correct substitute since it is at ¾ height in the catalyst bed. This step has been removed from the procedure. Grade based on use of attachment 1 sheet 2 only.

NRC Resolution:

Comment Accepted. The examiner reviewed the system description, lesson plan, and system technical manual. The examiner also requested the facility to determine if the technical basis for attachment 1 sheet 1 accounted for the use of top temperature rather than exit temperature. The technical manual does not require the use of delta T for monitoring recombiner operation and the instrument list in the system description does not list an exit temperature instrument. A quantitative comparison of attachment 1 sheet 1 and sheet 2 shows an apparent correlation between recombiner exit temperature and catalyst bed temperatures, however the facility is unable to identify an actual technical basis for the deleted attachment. Given that there is no labeled “recombiner exit temperature”, the procedure does not specify a particular instrument, the procedure allows use of sheet 1 OR sheet 2, and that the facility has now deleted sheet 1, the examiners have removed sheet one as a standard for this critical step.

JPM – Transfer Pressure Regulation from MPR to EPR

Facility Comment:

One critical step should not be critical. The requirement to establish an 11%-13% spread between the EPM and MPR setpoints is not actually critical until after pressure control has been transferred to the EPR and the EPR adjusted to control pressure. In this JPM, a malfunction is inserted while this task is being performed; therefore establishing this band should not have been identified as critical.

NRC Resolution:

Comment Partially Accepted. Based on observing the sequence of manipulations during administration of this JPM, the examiners determined that it was not critical to establish the 11%-13% spread until the control transfer had been completed. However, avoiding an unintentional transfer back to the MPR was still considered critical.